



Healthy Fruit, Vol. 31, No. 6, May 9, 2023

Prepared by the University of Massachusetts Amherst Fruit Team

Jon Clements, Editor






## Current degree day accumulations

UMass Cold Spring Orchard, Belchertown, MA (NEWA, since January 1, 2023)	8-May
Base 43 BE	443
Base 50 BE	208

Note that McIntosh petal fall should be approximately 439 to 52 DD's Base 43 BE.

## Current bud stages

Current bud stages. 8-May, 2023, UMass Cold Spring Orchard, Belchertown, MA (more current bud stages [here](#))

				
Rubymac apple <i>Early petal fall</i>	Honeycrisp apple <i>Full bloom+</i>	Gala apple <i>Full bloom+</i>	Fuji apple <i>Full bloom++</i>	Crispie pear <i>Petal fall</i>

## Upcoming meetings

**Every Tuesday at noon (12 PM), beginning April 11** - UMass Fruit Team Open Office Hour.

Bring your own lunch. Join Zoom Meeting here:

<https://umass-amherst.zoom.us/j/97712996237>

**Thursday, May 11** – UMass Fruit Twilight Meeting, Tougas Family Farm, 246 Ball Street, Northboro, MA. 5:30 to 7:30 PM. Orchard walk, current pest management and fruit thinning situation. Light dinner will be served. 2 pesticide recertification credits available, \$20 per person meeting fee for those receiving pesticide credit.

## The way I see it

Jon Clements

For once I can't complain about the weather, it does not get much better for orchard activities, planting, spray, enjoying, whatever. I expect McIntosh full petal fall by the end of the week, Honeycrisp and Gala (Gala, in particular) to drag their heels a bit, maybe by the end of the upcoming weekend? Or sooner, Friday may hit 80?

Everyone is busy, including myself – local hosting state pesticide inspectors from around the country here at the UMass Orchard on Wednesday – so I don't have much to say. But I am sure there will be plenty to talk about at our thinning themed twilight meeting at Tougas Family Farm in Northboro this Thursday (May 11) beginning at 5 PM. Hope you can plan on joining us.

And, I promise you I am not going to make a habit of this, but here is a link to the recording of today's open office lunch bunch if you missed

it...[https://umass-amherst.zoom.us/rec/share/CG62Jdf\\_eEa7eTzzdd3hzTObOr3l69-aAYGR\\_IGS\\_JLHzGLklfNtCQM5OqW9utiU.FmytbHlr\\_9dZDZTF](https://umass-amherst.zoom.us/rec/share/CG62Jdf_eEa7eTzzdd3hzTObOr3l69-aAYGR_IGS_JLHzGLklfNtCQM5OqW9utiU.FmytbHlr_9dZDZTF)

## Entomology

Jaime Piñero

**Weekly report of insect pest captures in monitoring traps at the UMass Cold Spring Orchard (Belchertown, MA)**

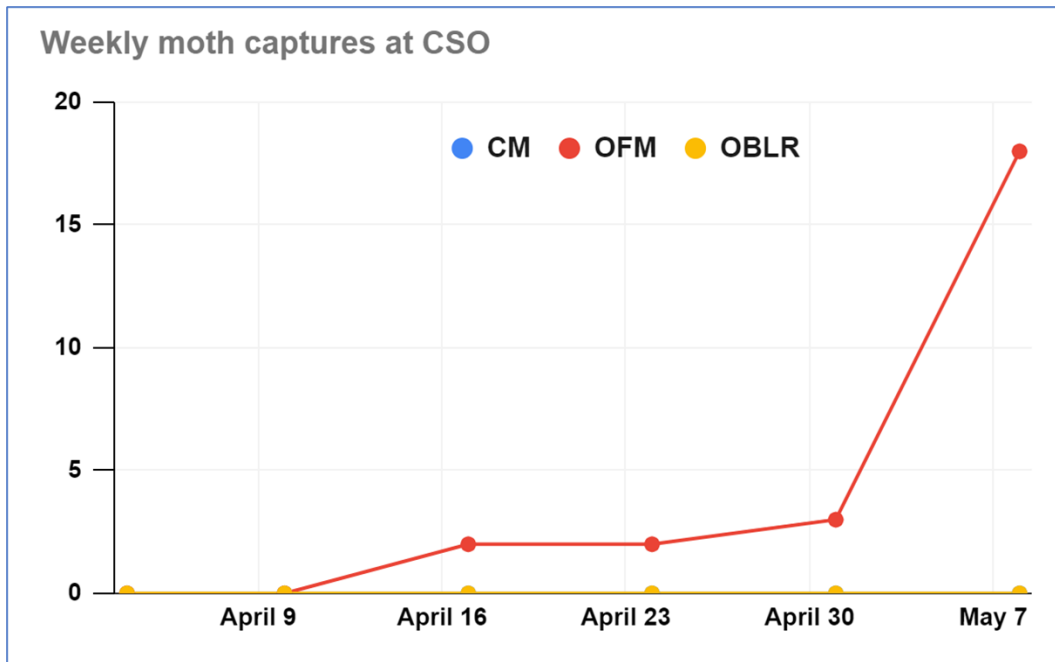
**Trap-capture data at the UMass CSO.**

**Period: May 3-9**

Insect	Average captures/trap	Notes
Obliquebanded leafroller	0	1 Pheromone-baited delta trap

Codling moth	0	1 Pheromone-baited delta trap
Oriental fruit moth	18	1 Pheromone-baited delta trap
Redbanded leafroller	17	By-catch (OBLR pheromone lure)
Plum curculio	0	2 odor-baited black pyramid traps
Plum curculio	0.2	26 unbaited black pyramid traps

At CSO, **OFM** activity increased substantially last week (see chart below, red line). The petal fall spray will provide good control of moth populations.



**Rosy apple aphid** showed up at CSO. Will provide an update next week.

**European apple sawfly** has become active this week in a couple of orchards including CSO..



**Insect pest activity in other orchards:** OFM numbers have been increasing as well in most of the orchards monitored.

**Petal-fall spray week!**

Consider the following plum curculio (PC) facts as you make the decision of when to spray:

- With the relatively high temperatures forecasted for this week, PC will become very active within the next 2-3 days.
- PC females will start laying eggs in the king fruit. Therefore, as soon as the king fruit gets to 5-6 mm in diameter, the entire block ought to be sprayed. Don't delay the spray.
- If the king fruit gets PC injury, then that fruit is more likely to stay until harvest and will have the typical PC scar.
- Refer to the [New England Tree Fruit Management Guide](#) for specific materials and rates recommended for managing PC. The materials are expected to be effective given the warm and dry expected for the next 4-5 days.
- Wintergreen oil (see guest article below) in combination with the PC pheromone has been found to be effective at concentrating PC injury on baited trees, thereby facilitating monitoring. The [simple PC monitoring approach](#) developed calls for a peripheral-row spray when a threshold of 1 fresh egg-laying scar per 25 fruit is reached in the odor-baited tree. The improved lure is cheaper and more effective than what was developed by UMass researchers 20 years ago.

**JUST A REMINDER: Early next week we will start collecting insecticide-sprayed apple fruit for the evaluations of residual toxicity of insecticides**

Insecticides:

- Imidan
- Verdepryn
- Avaunt eVo
- Actara
- SEVIN (thinning rate)

Experimental approach:

- **4, 7, and 10** days after the petal fall spray, we will drive to orchards to collect twigs with fruit.
- The material will be exposed to adult plum curculio and codling moth larvae.
- We will record insect mortality at 8, 24, 36 and 48 hours.
- Results will be posted in the HF Newsletter and in Fruit Notes (summer issue).

## Pathology

Jon Clements

The apple scab and fire blight season to date at the UMass Orchard according to RIMpro. Keep an eye on what is coming up, predicted to be a doozy for both scab and fire blight early next week (based on the current forecast anyways). Once again, fungicide options below. That's all I got, oh wait, some powdery mildew showing up at the UMass Orchard, Captan and mancozeb does not work on mildew! Consult NETFMG fungicide efficacy table [here....](#)

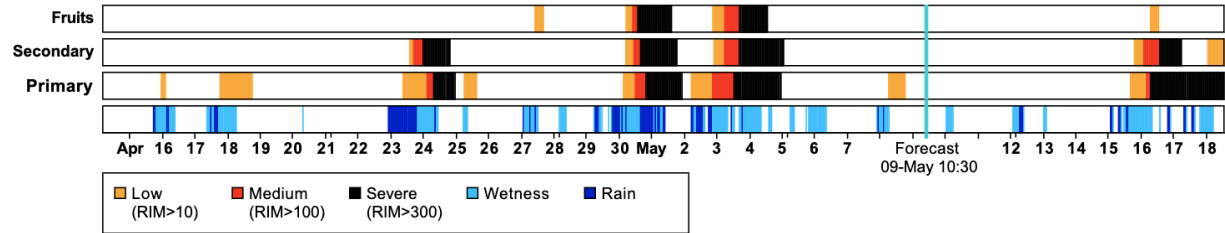
**Fire Blight**



**Apple Powdery Mildew**



**Apple and Pear scab**



Powdery mildew infected bud at UMass Orchard, 9-May, 2023

**Pesticide recommendations for apples, petal fall.**

CHOOSE one of the following:

FRAC Group	Pesticide	Recommended Rate Per Acre
3	Cevya <sup>a</sup>	4–5 fl oz
3	Indar 2F <sup>a</sup>	8 fl oz
3	Procure 480SC <sup>a</sup>	12–16 oz
3	Rally 40WSP <sup>a</sup>	10 oz
3	Rhyme <sup>a</sup>	4–6.5 fl oz
3	Topguard <sup>a</sup>	13 fl oz
3	Trionic 4SC <sup>a</sup>	12–16 fl oz
3 + 9	Inspire Super <sup>a</sup>	12 fl oz
7	Aprovia <sup>a</sup>	5.5–7 fl oz
7	Excalia <sup>a</sup>	3–4 fl oz
7	Fontelis <sup>a</sup>	16–20 fl oz
7	Kenja <sup>a</sup>	12.5 fl oz
7	Miravis <sup>a</sup>	3.4 fl oz
7	Sercadis <sup>a</sup>	3.5–4.5 fl oz
7 + 9	Luna Tranquility <sup>a</sup>	11.2–16 fl oz
7 + 11	Luna Sensation <sup>a</sup>	4–5.8 fl oz
7 + 11	Merivon <sup>a</sup>	4–5.5 fl oz
7 + 11	Pristine <sup>a</sup>	14.5–18.5 oz
9	Scala SC <sup>a</sup>	8–16 fl oz
9	Vanguard WG <sup>a</sup>	5 oz
11	Flint Extra <sup>a</sup>	2.9 fl oz
11	Sovran <sup>a</sup>	4–6.4 oz

In combination with one of the following:



FRAC Group	Pesticide	Recommended Rate Per Acre
M3	Manzate Pro-Stick <sup>b</sup>	3 lb
M3	Ziram 76DF	3 lb
M4	Captan 80WDG <sup>c,d</sup>	2.53 lb

## Horticulture

Jon Clements

Apple - mid-petal fall (McIntosh) to late bloom (Gala and Honeycrisp)

Below pics taken afternoon on 9-May. A solid 5 to 10 days ahead of last year, and still ahead of “average” (but closing in).

		
Honeycrisp 'full bloom+' 9-May	Rogers Red McIntosh 'full mid-early petal fall' 9-May	Gala 'full bloom+' 9-May'

## Chemical Thinning Suggestions for May 9, 2023

Duane Greene

Trees in most orchards should be at some developmental stage between bloom and petal fall. The weather forecast for the next 5 days is favorable for thinning. Don't miss this opportunity. The NEWA forecast shows a neutral carbohydrate balance over this time period. This coupled with the stage of bloom that the trees are in, more or less assures that you will not over thin at this time. Given that most orchards have a heavy bloom this year, application rates should be on the higher side.

### What is the meaning of petal fall???

There appears to be no unanimity of opinion on the meaning of petal fall. For clarity here I am going to call petal fall when nearly all of the petals are off flowers on the north side of a tree. (Ed. note: is north side of the tree relevant in high-density tall- or super-spindle modern apple orchards?) At that point the receptacle is not growing or growing very slowly. (See Figure 1.) This means that there is a minimal demand by the fruit for carbohydrate. Since there is little demand for carbohydrate soon after petal fall, I do not consider the carbohydrate balance model a useful guide until fruit grows to 5 to 6 mm. At that point it takes on special importance and it should play an important role in your thinning decision making.

### What Thinner Should You Use?

Assuming that you still have petals on flowers I do not suggest that you include carbaryl in sprays this week. Reserve the use of this thinner until all of the petals are off the flowers and presumably the bees are removed from the orchard. The workhorse thinners at this time of the year are NAA (Fruitone, Pomaxa, refine) and NAD (Amid-Thin W):

**Amid-Thin W** - This is a very old thinner that has been in use for at least 80 years. Its use went out of favor for a few years but now I think orchardists are using it more. I consider this to be a safe thinner. I have never over-thinned apples using Amid-Thin. My suggestion is to use it at a rate of 8 oz per 100 gal. dilute tree row volume. (Ed. note: if trees are 200 gallons per acre dilute tree row volume, and you are applying 100 gallons per acre (2X) then concentrate the

Amid-Thin using 16 oz. in 100 gallons. Got it?) Consider adding a surfactant when using Amid-Thin W.

**NAA** - This is a more commonly-used thinner at bloom and petal fall. When applied at bloom and petal fall it's thinning activity is not as great as when it is applied later at the 7-14 mm fruit size stage. A 10 ppm rate is considered a moderate rate, especially at this fruit stage of development and considering the weather that is forecast to occur in the next 5 days.

**6-BA** (Maxcel, exilis) - Some orchardists apply 6-BA at this stage of fruit development. I have not been very successful at thinning when making an application at this growth stage. Further, it is known not to work well as a thinner when applied when the temperatures are on the cool side as we are supposed to receive this coming week.

Do not miss this opportunity to start to chemically thin. It will make your thinning decisions easier in the next couple of weeks.

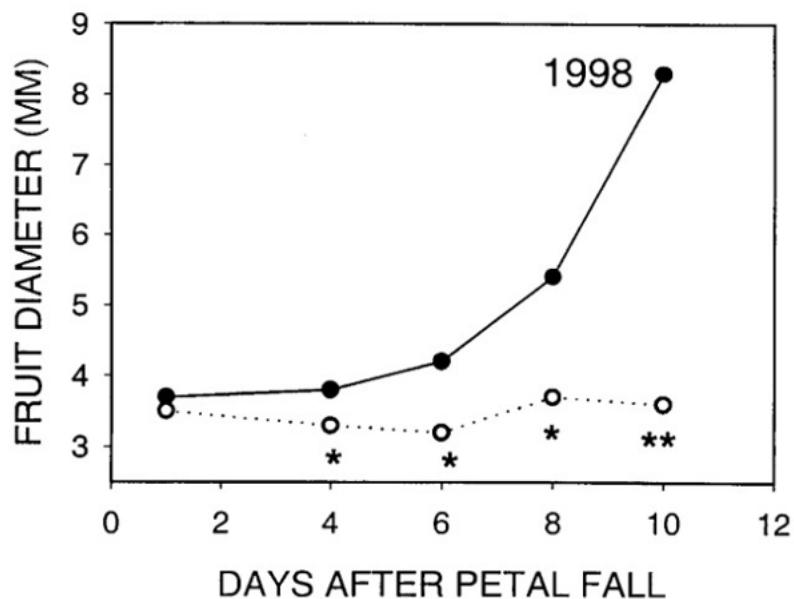


Figure 1. - apple fruitlet growth rate that were not pollinated and are not going to set (dotted line) vs. fruitlets that are pollinated and start to grow rapidly 6 to 8 days after petal fall

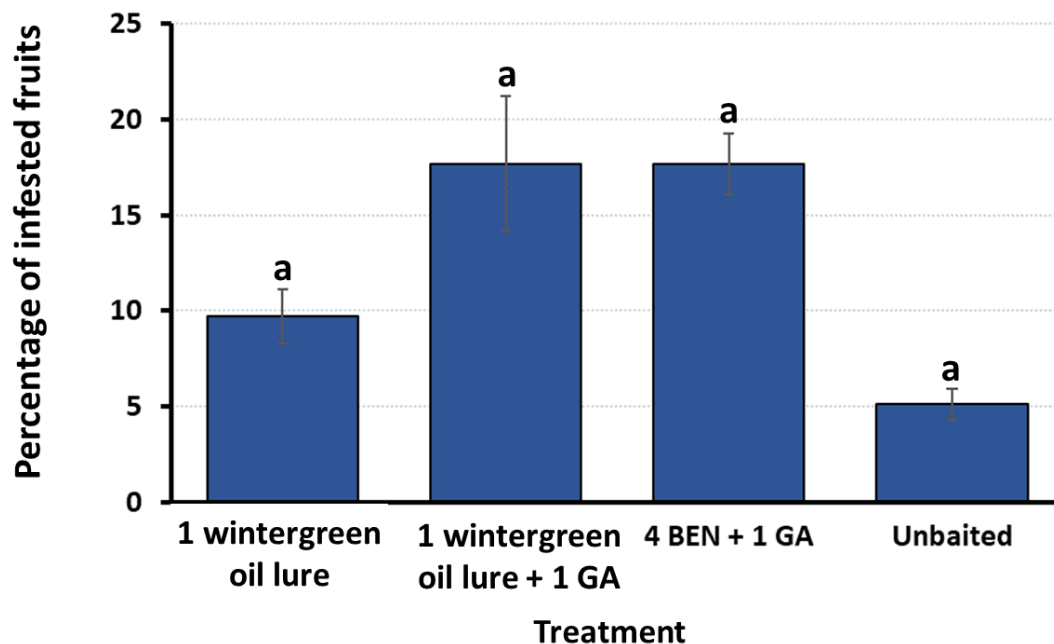
## Guest article

### Wintergreen oil improves the effectiveness of the odor-baited trap tree approach for adult plum curculio monitoring and attract-and-kill

Prabina Regmi, Tracy C. Leskey, Jaime C. Piñero



In commercial apple orchards, the odor-baited trap tree approach involving the synergistic lure composed of benzaldehyde (BEN) and the PC aggregation pheromone grandisoic acid (GA) serves as an effective monitoring tool as well as an attract-and-kill strategy for plum curculio (PC) management. However, the relatively high cost of the lure and the degradation of commercial BEN lures by UV light and heat discourage its adoption by growers. Over a 3-year period, we compared the attractiveness of wintergreen oil, either alone or in combination with GA, to PC with that of the standard combination of BEN + GA. Our main goal was to identify a potential replacement for BEN. Treatment performance was quantified using two approaches: (1) unbaited black pyramid traps (2020, 2021) to capture PC adults and (2) PC oviposition injury (2021, 2022) on apple fruitlets of trap trees and of neighboring trees to assess potential spillover effects. Traps baited with wintergreen oil captured significantly more PCs than unbaited traps. Trap trees baited with a single wintergreen oil lure and one GA dispenser attracted a similar number of PCs as trap trees baited with the standard lure composed of four BEN lures and one GA dispenser based on PC injury. Trap trees baited with wintergreen oil + GA received significantly more PC fruit injury than neighboring trees suggesting no or limited spill-over effects. Our collective findings suggest that wintergreen oil is a replacement for BEN thereby cutting costs of lures by ca. 50% while maintaining trap tree effectiveness.



Percentage of plum curculio-infested fruits on trap trees baited with three odor treatments versus unbaited trees. GA= grandisoic acid, the PC aggregation pheromone.

The combination of wintergreen oil and GA make a powerful attractant. Note that wintergreen oil alone is also attractive, when compared to unbaited trees.

In terms of costs of lures, the 1 wintergreen oil dispenser + 1 GA dispenser combination is less expensive than the standard lure consisting of 4 BEN dispensers + 1 GA lure per trap tree. The cost of 1 wintergreen oil dispenser is ca. \$3, and 1 GA dispenser is ca. \$8. Therefore, the total

cost for 1 MeSA dispenser + 1 GA dispenser would be half of the cost of 4 BEN dispensers + 1 GA dispenser which is greater than \$20. In addition to its relatively high cost, BEN lure is unstable, and it converts to benzoic acid under high UV light and heat. In contrast, wintergreen oil lure was found to continue to emit odor two months after initial deployment. The PC season typically lasts 6 weeks; therefore, a single wintergreen oil dispenser is expected to last the entire period of PC activity.

In summary, the three-year study was the first to test and quantify the attractiveness of wintergreen oil lure to PC. Our collective findings showed that 1 wintergreen oil + 1 GA is as attractive to PCs as the standard synergistic lure composed of 4 BEN + GA. These findings could increase the likelihood of adoption of the trap-tree approach for improved PC monitoring potentially leading to reduced insecticide sprays against PC in New England apple orchards.

## Useful links

UMass Fruit Advisor: <http://umassfruit.com>

Network for Environment and Weather Applications (NEWA): <http://newa.cornell.edu>

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[The Jentsch Lab](#) (Peter Jentsch, Poma Tech)

[Acimovic Lab](#) (Srdjan Acimovic at Virginia Tech)

[Tree Fruit Horticulture Updates](#) (Sherif Sherif at Virginia Tech)

[CCE ENYCHP Tree Fruit Blog](#)

The next Healthy Fruit will be published on or about May 16, 2023. In the meantime, feel free to contact any of the UMass Fruit Team if you have any fruit-related production questions.

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